

6159/ev

"PATENT APPLICATION"

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Before the Board of Patent Appeals and Interferences

In re Application of

JAMES D. KROL

U.S. Serial No. 10/692,857

Group Art Unit 1794

Filed: October 27, 2003

L. Tran, Examiner

LOW CARBOHYDRATE FOOD PRODUCT  
AND METHOD OF MAKING THE SAME

Alexandria, Virginia  
April 12, 2010

Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

B R I E F O N A P P E A L

Dear Sir:

This appeal is from the actions of the Primary Examiner mailed November 10, 2009 and January 26, 2010 in finally rejecting claims 11-15 and 22-36.

Applicant's brief fee of \$270 is attached. The Brief On Appeal is being submitted within the time for response. The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 02-3690 of the undersigned attorney.

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Real Party In Interest

The named inventor, James D. Krol, of the captioned application is the owner of the entire right, title and interest in the captioned application.

Related Appeals And Interferences

No appeal or interference is known to applicant which will directly affect or be directly affected by or have a bearing on the Board's decision in this pending appeal.

Status Of Claims

Claims 11-15 and 22-36 are pending in this application. Claims 11, 22, 27 and 31 are the independent claims. Claims 1-10 and 16-21 are canceled. Claims 11-15 and 22-36 are rejected. Accordingly, the appealed claims are claims 11-15 and 22-36 as set forth in the Claims Appendix hereto.

Status Of Amendments

A final Office action was mailed on November 10, 2009 finally rejecting pending claims 11-15 and 22-36. In response thereto, a timely Amendment After Final Rejection

was filed on January 11, 2010. An advisory action was mailed on January 26, 2010 stating that the Amendment After Final Rejection does not place the application in condition for allowance and that for purposes of appeal, the proposed amendments will not be entered because they raise new issues that would require further consideration and/or search.<sup>1</sup>

Summary Of Claimed Subject Matter

Claims 11, 22, 27 and 31 are the independent claims and are set forth below with reference to pages, paragraphs and line numbers of the specification.

Claim 11 claims a crustless pizza without a traditional dough crust layer (page 4, paragraph 0008, lines 1-3; page 7, paragraph 00018, lines 1-3) comprising:

a base layer of non-liquid ingredients consisting essentially of a dry formulated flour mixture and cheese (page 4, paragraph 0009, lines 1-3; page 7, paragraph 00019, lines 1-3); and

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<sup>1</sup> Applicant respectfully disagrees as this application has been pending for seven years and the applied art has been the same and the issues under consideration have been substantially the same. The proposed amended claims either clarified or further limited the claimed invention. The Examiner's prior searches would have located any more pertinent art, especially, as seen hereafter, in view of the lack of relevance of the art relied upon by the Examiner.

at least one food layer on top of said base layer (page 5, paragraph 00010, lines 4-9; page 9, paragraph 00023, lines 1-2), wherein said crustless pizza is lower in carbohydrates than a non-crustless pizza having a dough crust (page 13, paragraph 00031, lines 1-3).

Claim 22 claims a method of making a crustless pizza without a traditional dough crust layer (pages 3-4, paragraph 0007; page 4, paragraph 0008, lines 1-3) comprising the following sequence of steps:

preparing a dry formulated flour mixture comprising a high gluten flour and a baking powder (pages 7-8, paragraph 00019);

distributing a pre-measured amount of said dry formulated flour mixture evenly onto a cooking pan (page 8, paragraph 00019, lines 4-6; page 9, paragraph 00021, lines 1-4);

distributing a pre-measured amount of a cheese evenly over said dry formulated flour mixture (page 9, paragraph 00021, lines 4-6), wherein said dry formulated flour mixture and said cheese form a base layer (page 4, paragraph 0009, lines 1-3; page 7, paragraph 00019, lines 1-3);

distributing a pre-measured amount of a pizza

sauce or a tomato sauce evenly over and on top of said base layer (page 5, paragraph 00010, lines 9-11; page 10, paragraph 00023, lines 2-3);

adding and distributing evenly a pre-measured amount of at least one food layer over and on top of said pizza sauce or said tomato sauce (page 9, paragraph 00023, lines 1-2; page 15, paragraph 00032, Ex. 1, lines 17-19); and

baking said crustless pizza for a suitable time and at a suitable temperature (page 11, paragraph 00027, lines 1-3), wherein said crustless pizza is lower in carbohydrates than a non-crustless pizza having a dough crust (page 13, paragraph 00031, lines 1-3).

Claim 27 claims a pizza without a traditional dough crust (page 4, paragraph 0008, lines 1-3) consisting essentially of:

a base layer consisting essentially of flour and cheese and forming a support layer for the remaining ingredients of said pizza (page 4, paragraph 0009, lines 1-3; page 7, paragraph 00019, lines 1-3);

a layer of tomato sauce on top of said base layer (page 5, paragraph 00010, lines 9-11; page 10, paragraph 00023, lines 2-3); and

at least one food product layer on top of said

layer of tomato sauce (page 9, paragraph 00023, lines 1-2; page 15, paragraph 00032, Ex. 1, lines 17-19), wherein said pizza is lower in carbohydrates than a traditional pizza having a dough crust (page 13, paragraph 00031, lines 1-3).

Claim 31 claims a pizza without a traditional dough crust (page 4, paragraph 0008, lines 1-3) consisting essentially of:

a base layer consisting essentially of flour and cheese and forming a support layer for the remaining ingredients of said pizza (page 4, paragraph 0009, lines 1-3; page 7, paragraph 00019, lines 1-3);

a layer of cheese on top of said base layer (page 9, paragraph 00023, lines 1-4; page 10, paragraph 00024, lines 1-2);

a layer of tomato sauce on top of said cheese layer (page 5, paragraph 00010, lines 9-11; page 10, paragraph 00023, lines 2-3); and

at least one food product layer on top of said layer of tomato sauce (page 9, paragraph 00023, lines 1-2; page 15, paragraph 00032, Ex. 1, lines 17-19), wherein said pizza is lower in carbohydrates than a traditional pizza having a dough crust (page 13, paragraph 00031, lines 1-3).

Grounds Of Rejection To Be Reviewed On Appeal

The grounds of rejection of the present appeal are:

- A. Claims 11-15 under 35 U.S.C. § 112, second paragraph, as being indefinite; and
- B. Claims 11-14 and 22-36 under 35 U.S.C. § 103(a) based on the "Lutein of DreamPharm" excerpt articles relying on the recipes for "DEEP DISH PIZZA" and "Low Carb Pizza" in view of the Google Groups reference to "[www.netition.com](http://www.netition.com)" "KetoCrust".

Argument

I. Rejection Of Claims 11-15 Under 35 U.S.C.  
§ 112, Second Paragraph, As Being Indefinite

The Examiner rejected claims 11-15 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Specifically, the Examiner states at pages 2-3 of the Office action mailed November 10, 2009 that:

In claim 11, the phrase "non-liquid ingredients" is indefinite because it is not known what would be considered as "non-liquid ingredients". It is not clear what is excluded or included from such phrase and the specification does not define what will constitute "non-liquid

ingredients". The specification discloses the base layer comprises vegetables and fruits which are known to contain water; thus, it is not clear what is intended by "non-liquid food ingredients".

Also, the Examiner states that claim 14 has the same problem as claim 11. See page 3 of the Office action mailed November 10, 2009.

Further, the Examiner states on page 3 of the Office action mailed November 10, 2009 that:

It is not clear what applicant intends by "non-liquid ingredients" and the specification does not give any insight into what non-liquid ingredients constitute. Clearly, many of the ingredients disclosed to be in the base layers contains moisture. For example, vegetable, fruit, fish, contain moisture; thus, they cannot be considered as non-liquid ingredients. Thus, the claims are indefinite because it is not clear what is excluded or included in the ingredients to be considered non-liquid ingredients.

The Court of Appeals for the Federal Circuit in Hearing Components, Inc. v. Shure Inc., -- F.3d --, 2010 WL 1236321, \*6-7, Nos. 2009-1364, 2009-1365 (Fed. Cir. April 1, 2010) recently addressed 35 U.S.C. § 112, second paragraph, and is instructive herein. The Court stated that:

Under 35 U.S.C. § 112, second paragraph, the "specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention," which is known as the definiteness requirement. "Claims are considered indefinite when they are not amenable to construction or are insolubly ambiguous. Thus,



the definiteness of claim terms depends on whether those terms can be given any reasonable meaning. Indefiniteness requires a determination whether those skilled in the art would understand what is claimed." Young, 492 F.3d at 1364 (internal citations and quotation marks omitted). The purpose of the definiteness requirement is to ensure that "the claims, as interpreted in view of the written description, adequately perform their function of notifying the public of the scope of the patentee's right to exclude." Honeywell Int'l, Inc. v. Int'l Trade Comm'n, 341 F.3d 1332, 1339 (Fed. Cir. 2003) (quotation marks omitted).

Here, the district court noted that the patentee has used a word of degree, "readily." "[A] patentee need not define his invention with mathematical precision in order to comply with the definiteness requirement." Invitrogen Corp. v. Biocrest Mfg., L.P., 424 F.3d 1374, 1384 (Fed. Cir. 2005) (quotation marks omitted). Not all terms of degree are indefinite. However, the specification must "provide[ ] some standard for measuring that degree." Datamize, LLC v. Plumtree Software, Inc., 417 F.3d 1342, 1351 (Fed. Cir. 2005) (quotation marks omitted). ... as with terms of degree, "a court must determine whether the patent's specification supplies some standard for measuring the scope of the phrase. Thus, we next consult the written description. Id.

Thus, claims do not need to be defined with mathematical precision. As long as one skilled in the art would understand the meaning of the claim language based on the specification, the claim is definite.

As seen hereafter, claims 11-15 are definite as the claim language "non-liquid ingredients" would clearly be

understood by one skilled in the art based on the specification.

The claim language "a base layer of non-liquid ingredients" is definite. It is an ingredient which is not a liquid. The language is fully supported by the specification which specifically teaches that the base layer is of non-liquid ingredients. Specifically, the specification states at page 7, paragraphs 00018 and 00019, among other places, that:

A dough layer in a traditional pizza is generally a mixture that consists essentially of flour or meal and a liquid, such as water or milk, and is stiff enough to knead or roll.

Instead, the pizza of the present invention has a base layer which is comprised of a formulated flour (dry ingredients) and a cheese mixture...  
(emphasis added)

Accordingly, the specification specifically teaches that the prior art pizza doughs included a liquid. The present invention, as set forth in the specification, states that the base layer includes a formulated flour (dry ingredients) and cheese mixture. Thus, formulated flour in dry form and cheese are not a liquid. Something which is not a liquid is understood as a non-liquid. The term "non" is a commonly known term which means "not". See The American Heritage

Dictionary Of The English Language, page 892, a copy attached hereto as Exhibit 1 in the Evidence Appendix.

Applicant's position is supported by the examples provided in the specification. See pages 14-17. Additionally, the optional ingredients to the base layer are non-liquids. See, e.g., specification pages 8-9, paragraph 00020. Accordingly, the specification clearly teaches one skilled in the art that the base layer of the claimed pizza is of non-liquid ingredients and provides examples of these non-liquid ingredients.

Further, the Examiner's statement that vegetables and fruit would not be considered as non-liquid is without basis. Vegetables and fruits are solids. It is elementary that there are three states of matter, namely gas, liquid and solid. See "States of Matter", Glenn Research Center, National Aeronautics and Space Administration, ("matter normally exists as either a **solid, a liquid or a gas**" (original emphasis)), a copy attached hereto as Exhibit 2 in the Evidence Appendix. "A solid holds its shape and the volume of a solid is fixed by the shape of the solid. ... A liquid will take the shape of its container with a free surface in a gravitational field. ... [and] a liquid has a fixed volume." Id. Vegetables, fruits and fish are solids. They are non-liquids.

The word "liquid" is a term known to those skilled in the art and is defined in The American Heritage Dictionary Of The English Language as:

The state of matter in which a substance exhibits a characteristic readiness to flow, little or no tendency to disperse, and relatively high incompressibility.

See Exhibit 1, page 761 in the Evidence Appendix.

Vegetables, fruits and fish are clearly non-liquids. This is known to one skilled in the art.

The Examiner argues that vegetables and fruits "are known to contain water" and that vegetables, fruits and fish "contain moisture". However, vegetables, fruits and fish are solids, they are non-liquids, they do not flow. Additionally, even if vegetables, fruits and fish are considered to be "liquid" materials, which they are not, the specification only teaches that these items may "optionally" be added to the base layer. In the claim, the base layer is defined as "a base layer of non-liquid ingredients consisting essentially of a dry formulated flour mixture and cheese." Thus, even accepting the Examiner's argument, which applicant does not, one skilled in the art, assuming he believed that a fruit, a vegetable or a fish was a liquid and not a solid, would know that the invention in claim 11 does not include these ingredients.

Further, claim 11 requires "a base layer of non-liquid ingredients consisting essentially of a dry formulated flour mixture and cheese" (emphasis added).

"Consisting essentially of" is a common transitional phrase in patent law requiring that the material ingredients in the mixture are the formulated flour mixture and cheese and precludes any other ingredients which materially affect the basic and novel properties of the invention. PPG Industries Inc. v. Guardian Industries Corp., 48 USPQ2d 1350, 1353-54 (Fed. Cir. 1998) ("PPG Industries"). The addition of other ingredients which are not dry and which are liquid or contain liquid to applicant's base layer of a dry formulated flour mixture and cheese would materially affect the base layer. Thus, the phrase "consisting essentially of" excludes any liquid ingredients from applicant's claimed base layer as such ingredients would materially affect applicant's "base layer of non-liquid ingredients consisting of a dry formulated flour mixture and cheese".

For the foregoing reasons, applicant respectfully requests reversal of the Examiner's rejection of claims 11-15 under Section 112, second paragraph.

II. Rejection Of Claims 11-14 and 22-36  
Under 35 U.S.C. § 103(a)

A. Introduction

Claims 11-14 and 22-36 are rejected under 35 U.S.C. § 103(a) as being obvious to one skilled in the art at the time of the invention based on the "Lutein of DreamPharm" excerpt articles relying on the recipes for "DEEP DISH PIZZA" and "Low Carb Pizza" ("Lutein") in view of the Google Groups reference to "[www.netition.com](http://www.netition.com)" "KetoCrust" ("Google Groups").

It is incumbent upon the Examiner to set forth a prima facie case of obviousness. As set forth in the recent Supreme Court decision in KRS Int'l Co. v. Teleflex Inc., 127 S.Ct. 1727, 82 USPQ2d 1385 (2007), the Examiner must set forth what is disclosed in the prior art and compare the disclosure of the prior art to each of the claims which the Examiner has rejected. The Examiner must show why it would be obvious to combine the references relied upon by either showing some suggestion for combining the references within the references themselves or stating why it would be known to one skilled in the art to combine the references. The combined references must disclose the claimed invention. For the reasons set forth hereafter, applicant respectfully

submits that the Examiner has not made a prima facie case of obviousness and the Lutein and Google Groups references do not alone or in combination disclose or suggest applicant's claimed inventions.

Additionally, the Examiner does not apply the references to each of the rejected claims. Rather, the Examiner makes a number of conclusory statements that it would have been obvious to one skilled in the art to combine the references, without stating why or where it would be obvious to combine the references and why the combined references disclose each of the inventions claimed in claims 11-14 and 22-36. Further, applicant respectfully disagrees with the Examiner's recitation of what is disclosed in the cited references. Therefore, applicant will hereafter address the cited references in detail and then address the rejected claims.

B. The Cited References

The Lutein reference discloses four different recipes for pizzas, namely (1) "Crustless Pizza;" (2) "Diet-Right Pizzas;" (3) "DEEP DISH PIZZA;" and (4) "Low Carb Pizza." The Examiner relies upon the recipes for the Deep Dish Pizza and the Low Carb Pizza as discussed hereafter.

6159/USSN 10/692,857  
Group Art Unit 1794

The Deep Dish Pizza disclosure is as follows:

#### DEEP DISH PIZZA

##### Ingredients:

4 oz. cream cheese  
3 eggs  
1/3 cup cream  
1/4 cup grated Parmesan cheese  
1/2 tsp. oregano  
1/4 tsp. garlic powder 2 cups shredded mixed Italian cheese  
1/2 cup low-carb (no sugar added) pizza sauce  
1 cup shredded mozzarella

Pizza toppings of your choice: pepperoni, ham, green onion, green pepper, mushrooms, bacon, browned sausage or seasoned ground beef, additional parmesan.

##### How to prepare:

Preheat oven to 375 degrees. Beat together cream cheese and eggs until smooth; add cream, parmesan, and spices and mix again. Oil oblong casserole dish with olive oil or spray with PAM; sprinkle the Italian cheeses over the bottom of the dish and pour the egg mixture over. Bake for about 15 minutes; allow to stand for 5 minutes. Spread on pizza sauce, sprinkle mozzarella, and pile on your favorite toppings. Sprinkle with more Parmesan if desired. Return to oven and bake until bubble and browning. Allow to stand for 10 more minutes before cutting.

Accordingly, the crust of the Deep Dish Pizza consists of the Italian cheeses sprinkled over the bottom of the casserole dish upon which the liquid cream and egg mixture is poured. The liquid cream and egg mixture consists of beating together cream cheese and eggs until smooth, and adding cream, parmesan, and spices and mixing again. Thereafter, the base layer is cooked for 15 minutes. The sauce is then spread on the base layer and other toppings



provided thereon. Thus, the base layer comprises Italian cheese and the liquid mixture of cream cheese, eggs, cream, parmesan and spices.

The Low Carb Pizza cited by the Examiner is as follows:

#### Low Carb Pizza

Here's a dish that can stave off a pizza craving for low carb dieters or those who need to avoid wheat products. Zucchini or spaghetti squash work equally well for this crust, with spaghetti squash providing a somewhat sweeter flavor. Bake this in a traditional 9" pie pan, not a pizza pan.

This is a vegetarian recipe, but you could easily add whatever pizza toppings are your favorites, including pepperoni or sausage or other veggies.

3 cups grated raw zucchini  
OR  
3 cups cooked spaghetti squash  
2 eggs, beaten  
2 1/2 cups mozzarella cheese  
1 1/2 cups tomato sauce  
1/2 small onion, thinly sliced  
1 small green bell pepper, chopped  
1/2 cup sliced mushrooms  
1/4 cup sliced black olives  
1/2 cup grated Parmesan cheese  
1 tsp. dried oregano  
1 tsp. dried basil  
1 Tbsp. olive oil

Serves 3-4. Preheat oven to 400F. Squeeze the excess moisture out of the grated zucchini or cooked spaghetti squash with paper towels. Mix the squash, eggs and 1 1/2 cups mozzarella together and press into the bottom of a pie pan. Bake for about 10 minutes. Remove the pan from the oven and spread the tomato sauce, vegetables or other pizza toppings and the remaining cheeses over the crust. Sprinkle with oregano and basil and drizzle the olive oil over the

top. Bake for 25 minutes or until cheese is lightly browned.

Accordingly, this pizza has a pizza crust of either zucchini or spaghetti squash mixed with eggs and mozzarella.

The Google Groups reference disclosure is minimal and states as follows:

www.netrition.com has KetoCrust which is a **low carb pizza crust**. It's tolerable, and a little on the spendy side. There are recipes for **low carb** crusts that use a little flour and some whey protein in a cook book I bought, but I haven't tried them, so I hesitate to recommend them right now.

(original emphasis) Accordingly, this reference apparently teaches a traditional pizza crust that uses, apparently, among other things, "a little flour and some whey protein." There is no disclosure as to what constitutes "a little" or what other ingredients are in the "cook book I bought" or how the pizza is made.

Notwithstanding the minimal disclosure of the Google Groups reference, a combination of the Deep Dish Pizza recipe and the Google Groups disclosure would provide for the following recipe:

1. Beat together cream cheese and eggs until smooth, add cream, parmesan, spices and a little flour and some whey protein, and mix again.

2. Oil oblong casserole dish with olive oil or spray with PAM;
3. Sprinkle the Italian cheeses over the bottom of the dish and pour the liquid egg mixture over.
4. Bake for about 15 minutes; allow to stand for 5 minutes.
5. Spread on pizza sauce, sprinkle mozzarella, and pile on your favorite toppings.
6. Sprinkle with more Parmesan if desired.
7. Return to oven and bake until bubble and browning.
8. Allow to stand for 10 more minutes before cutting.

A combination of the Low Carb Pizza and Google

Groups disclosure would be as follows:

1. Preheat oven to 400°F.
2. Squeeze the excess moisture out of the grated zucchini or cooked spaghetti squash with paper towels.
3. Mix the squash, eggs, 1 1/2 cups mozzarella and a little flour and some whey protein together and press into the bottom of a pie pan.
4. Bake for about 10 minutes.
5. Remove the pan from the oven and spread the tomato sauce, vegetables or other pizza toppings and the remaining cheeses over the crust.
6. Sprinkle with oregano and basil and drizzle the olive oil over the top.

7. Bake for 25 minutes or until cheese is lightly browned.

As seen hereafter, these combinations of references do not disclose applicant's claimed inventions.

C. Independent Claim 11

Independent claim 11 claims as follows:

11. A crustless pizza without a traditional dough crust layer comprising:

a base layer of non-liquid ingredients consisting essentially of a dry formulated flour mixture and cheese; and

at least one food layer on top of said base layer, wherein said crustless pizza is lower in carbohydrates than a non-crustless pizza having a dough crust.

This claim is specifically directed to pizzas not having a traditional pizza crust. The claim requires a base layer of non-liquid ingredients consisting essentially of a dry formulated flour mixture and cheese. As seen above, the Deep Dish Pizza reference in combination with the Google Groups reference does not teach or suggest these limitations. The Deep Dish Pizza when combined with the Google Groups disclosure provides for a liquid mixture including cream and beaten eggs poured over the cheeses. This is contrary to the teaching of the invention of claim 11.

Similarly, the Low Carb Pizza and Google Groups references do not disclose or suggest these limitations. The Examiner argues at page 4 of the Office action mailed November 10, 2009 and in applying these references that:

With regard to the Low Carb Pizza, the base layer is formed by mixing squash, eggs and cheese. There is not (sic) indication that the additional ingredient of egg and squash materially affects the claimed product as the specification discloses additional materials can be added to the base layer including moisture containing ingredients such as fruit, vegetable, fish etc.. As to the carbohydrate content, the pizza does not contain the traditional crust and the flour added is vary (sic) little, it is expected the carbohydrate content is not as in traditional pizza and is in the range as claimed. It would have been obvious to one skilled in the art to vary the ingredients to adjust the carbohydrate content to the level desired.

By including the liquid egg mixture in the base layer, the Low Carb Pizza recipe does not consist of a base layer of non-liquid ingredients consisting essentially of a dry formulated flour mixture and cheese as claimed. The liquid egg mixture would materially affect applicant's base layer of non-liquid ingredients as claimed.

Further, claim 11 requires a base layer of non-liquid ingredients consisting essentially of a dry formulated flour mixture and cheese. As noted above, "consisting essentially of" is a common transitional phrase

requiring that the material ingredients in the mixture are the formulated flour mixture and cheese and precludes any other ingredients which materially affect the basic and novel properties of the invention. PPG Industries, 48 USPQ2d at 1353-54. With respect to claim 11, the Deep Dish Pizza reference when combined with the Google Groups reference does not teach or suggest a base layer of non-liquid ingredients consisting essentially of a dry formulated flour mixture and cheese. Rather, it teaches a base layer of cheese and a liquid mixture including cream and beaten eggs. The ingredients of the Deep Dish Pizza of eggs, cream and cream cheese are different from and would clearly materially affect the base layer of applicant's claimed invention.

Similarly, as set forth above, the ingredients in the Low Carb Pizza recipe in combination with Google Groups reference would materially affect the ingredients in the claimed base layer.

At page 4 of the Office action mailed November 10, 2009 in addressing claims 27-36, the Examiner cites Section 2111.03 of the Manual of Patent Examining Procedure ("MPEP") stating that "for the purposes of searching and for applying prior art under 102/103, absent a clear indication in the specification or claims of what the basic and novel

characteristics actually are, "consisting essentially of" will be construed as equivalent to "comprising". (emphasis added) While claim 11 is not included in this argument by the Examiner, applicant addresses this issue with regard to claim 11 which includes the transitional phrase "consisting essentially of". As seen hereafter, applicant's claims are clear as to the claimed novel characteristics and are supported by the specification.

In this case, applicant's claim is clear that the base layer is of non-liquid ingredients consisting essentially of a dry formulated flour mixture and cheese. The addition of the liquids used in the Deep Dish Pizza and Low Carb Pizza recipes would clearly materially change the characteristics of applicant's claimed invention.

Accordingly, the Lutein and Google Groups references do not teach one skilled in the art applicant's claimed inventions and the rejection of claim 11 must be reversed. For these same reasons, these references do not render dependent claims 12-14 and 35 obvious. Applicant will also argue hereafter separately additional reasons for allowance of dependent claims 12, 13 and 35.

D. Dependent Claim 12

Dependent claim 12 claims the crustless pizza of claim 11 wherein the dry formulated flour mixture comprises a high gluten flour and a double acting baking powder. Admittedly the Deep Dish Pizza and the Low Carb Pizza recipes do not teach high gluten flour or double acting baking powder as an ingredient thereof. Accordingly, the Examiner relies solely upon the Google Groups reference for this rejection which states that:

www.netrition.com has KetoCrust which is a **low carb pizza crust**. It's tolerable, and a little on the spendy side. There are recipes for **low carb** crusts that use a little flour and some whey protein in a cook book I bought, but I haven't tried them, so I hesitate to recommend them right now.

(original emphasis). Accordingly, there is absolutely no teaching in this reference of a high gluten flour and a double acting baking powder. For these reasons, claim 12 is not obvious over the cited references.

E. Dependent Claim 13

Dependent claim 13 claims the crustless pizza of claim 12 wherein a batch of the dry formulated flour mixture comprises 6 cups of the high gluten flour and 2 tablespoons of the double acting baking powder, wherein the low



carbohydrate crustless pizza comprises approximately one teaspoon of the batch of the dry formulated flour mixture. Since neither the Deep Dish Pizza nor the Low Carb Pizza references teach high gluten flour or double acting baking powder as an ingredient thereof, neither recipe can teach the specific claimed amounts of high gluten flour and double acting baking powder in a batch of dry formulated flour mixture or the specific amount of the mixture which is used in each pizza. Similarly, the Google Groups reference only teaches the use of "a little flour." Therefore, the Google Groups reference does not teach a high gluten flour and a double acting baking powder, much less using six cups of the high gluten flour and two tablespoons of the double acting baking powder to make a batch of the dry formulated flour mixture and using one teaspoon of the batch for each pizza. Claim 13 is, therefore, not obvious over the cited references.

F. Dependent Claim 35

Dependent claim 35 claims the pizza of claim 11, wherein the total carbohydrates for the pizza is in the range of about 1.0 grams to about 3.5 grams per 4.2 ounce serving of the pizza. There is no disclosure in the Deep

Dish Pizza reference, the Low Carb Pizza reference or the Google Groups disclosure as to the amount of carbohydrates in the pizzas disclosed therein, nor does the Examiner reference any. Accordingly, nothing in the combination of the cited references teach a pizza having total carbohydrates in the range of about 1.0 grams to about 3.5 grams per 4.2 ounce serving of pizza. Claim 35 is, therefore, not obvious over the cited references.

G. Independent Claim 27

Independent claim 27 claims as follows:

27. A pizza without a traditional dough crust consisting essentially of:

    a base layer consisting essentially of flour and cheese and forming a support layer for the remaining ingredients of said pizza;

    a layer of tomato sauce on top of said base layer;  
and

    at least one food product layer on top of said layer of tomato sauce, wherein said pizza is lower in carbohydrates than a traditional pizza having a dough crust.

This claim is specifically directed to pizzas not having a traditional pizza crust. The claim requires a base layer consisting essentially of flour and cheese and forming a support layer for the remaining ingredients of the pizza. As seen above, the Deep Dish Pizza recipe in combination

with the Google Groups reference does not teach or suggest these limitations. The Deep Dish Pizza when combined with the Google Groups disclosure provides for a liquid mixture including cream and beaten eggs poured over the cheeses. This is contrary to the teaching of the invention of claim 27.

Similarly, for the reasons set forth above for claim 11, the Low Carb Pizza recipe in combination with the Google Groups reference does not teach or suggest at least a base layer consisting essentially of flour and cheese and forming a support layer for the remaining ingredients of the pizza.

Further, claim 27 requires a base layer consisting essentially of flour and cheese. As stated above, "consisting essentially of" is a common transitional phrase requiring that the material ingredients of the base layer are the flour and cheese and precludes any other ingredients which materially affect the basic and novel properties of the invention. PPG Industries, 48 USPQ2d at 1353-54. With respect to claim 27, the Deep Dish Pizza reference when combined with the Google Groups reference does not teach or suggest a base layer consisting essentially of flour and cheese. Rather, it teaches a base layer of cheese and a

liquid mixture including cream and beaten eggs. The ingredients of the Deep Dish Pizza of eggs, cream and cream cheese are different from and would clearly materially affect the base layer of applicant's claimed pizza. Similarly, the ingredients of the Low Carb Pizza are different and would materially affect the base layer.

As seen above, the Office action mailed November 10, 2009 at page 4 references Section 2111.03 of the Manual of Patent Examining Procedure for the proposition that "consisting essentially of" should be construed as equivalent to "comprising". This is not applicable herein for the reasons set forth above for claim 11.

For the foregoing reasons, claim 27 is not obvious based on the cited references and the rejection should be reversed. For these same reasons, the cited references do not render the dependent claims 28-30 obvious. Applicant will also argue hereafter separately additional reasons for allowance of dependent claims 28 and 30.

H. Dependent Claim 28

Dependent claim 28 claims the pizza of claim 27, wherein the flour is a dry formulated flour consisting essentially of high gluten flour and a double acting baking

powder. The additional limitations of claim 28 are the same limitations as claimed in claim 12 above. Applicant incorporates herein by reference and relies on the arguments and reasons for allowance set forth above for claim 12. Accordingly, claim 28 is not obvious over the cited references.

I. Dependent Claim 30

Dependent claim 30 claims the pizza of claim 27, wherein the total carbohydrates for the pizza is in the range of about 1.0 grams to about 3.5 grams per 4.2 ounce serving of the pizza. The additional limitations of claim 30 are the same limitations as claimed in claim 35 above. Applicant incorporates herein by reference and relies on the arguments and reasons for allowance set forth above for claim 35. Accordingly, claim 30 is not obvious over the cited references.

J. Independent Claim 31

Independent claim 31 claims as follows:

31. A pizza without a traditional dough crust consisting essentially of:

a base layer consisting essentially of flour and cheese and forming a support layer for the remaining ingredients of said pizza;

a layer of cheese on top of said base layer;

a layer of tomato sauce on top of said cheese layer; and

at least one food product layer on top of said layer of tomato sauce, wherein said pizza is lower in carbohydrates than a traditional pizza having a dough crust.

This claim is specifically directed to pizzas not having a traditional pizza crust. The claim requires a base layer consisting essentially of flour and cheese and forming a support layer for the remaining ingredients of the pizza. As seen above, the Deep Dish Pizza recipe in combination with the Google Groups reference does not teach or suggest these limitations. The Deep Dish Pizza recipe when combined with the Google Groups reference provides for a liquid mixture including cream and beaten eggs poured over the cheeses. This is contrary to the teaching of the invention of claim 31. Similarly, the Low Carb Pizza recipe and the Google Groups reference do not disclose or suggest this limitation. Rather, they have a base layer of a mixture of zucchini or squash and eggs.

Further, claim 31 requires a base layer consisting essentially of flour and cheese. As seen above "consisting essentially of" requires that the material ingredients of the base layer are the flour and cheese ingredients. The

additional ingredients in the base layers of the Deep Dish Pizza and Low Carb Pizza recipes when combined with the Google Groups reference would materially affect the claimed base layer rendering the cited reference irrelevant to the claimed invention.

For the reasons set forth above, the Examiner's reliance on Section 2111.03 of the Manual of Patent Examining Procedure is inapposite.

Accordingly, claim 31 is not rendered obvious based on the cited references and the rejection should be reversed. For these same reasons, the cited references do not render dependent claims 32-34 obvious. Applicant will also argue hereafter separately additional reasons for allowance of dependent claims 32 and 34.

K. Dependent Claim 32

Dependent claim 32 claims the pizza of claim 31, wherein the flour is a dry formulated flour consisting essentially of high gluten flour and a double acting baking powder. The additional limitations of claim 32 are the same limitations as claimed in claim 12 above. Applicant incorporates herein by reference and relies on the arguments

and reasons for allowance set forth above for claim 12.  
Claim 32 is therefore not obvious over the cited references.

L. Dependent Claim 34

Dependent claim 34 claims the pizza of claim 31, wherein the total carbohydrates for said pizza is in the range of about 1.0 grams to about 3.5 grams per 4.2 ounce serving of the pizza. The additional limitations of claim 34 are the same limitations as claimed in claim 35 above. Applicant incorporates herein by reference and relies on the arguments and reasons for allowance set forth above for claim 35. Claim 34 is, therefore, not obvious over the cited references.

M. Independent Claim 22

Independent claim 22 claims the following method:

22. A method of making a crustless pizza without a traditional dough crust layer comprising the following sequence of steps:

preparing a dry formulated flour mixture comprising a high gluten flour and a baking powder;

distributing a pre-measured amount of said dry formulated flour mixture evenly onto a cooking pan;

distributing a pre-measured amount of a cheese evenly over said dry formulated flour mixture, wherein said dry formulated flour mixture and said cheese form a base layer;



distributing a pre-measured amount of a pizza sauce or a tomato sauce evenly over and on top of said base layer;

adding and distributing evenly a pre-measured amount of at least one food layer over and on top of said pizza sauce or said tomato sauce; and

baking said crustless pizza for a suitable time and at a suitable temperature, wherein said crustless pizza is lower in carbohydrates than a non-crustless pizza having a dough crust.

This claim claims a method following a specific sequence of steps. As discussed more specifically hereafter, the sequence of steps are not disclosed in the Deep Dish Pizza recipe when combined with the Google Groups reference as set forth above. Thus, for example, this combination of references does not disclose first preparing a dry formulated flour mixture comprising a high gluten flour and baking powder. Rather, the combination of references cited by the Examiner disclose sprinkling Italian cheese over the bottom of a casserole dish and pouring the liquid egg mixture of cream, beaten eggs, cream cheese, parmesan, spices and a little flour and some whey protein onto the Italian cheeses and then baking the mixture. Thereafter, pizza sauce and other toppings are added. In the claimed method, the base layer is the dry formulated flour mixture and cheese. Accordingly, the method of claim 22 is not

disclosed by the combination of the Deep Dish Pizza recipe and the Google Groups recipe. For these same reasons, the claimed method would not have been obvious to one skilled in the art based on the combination of the Low Carb Pizza recipe and the Google Groups reference.

For the foregoing reasons, the method claimed in claim 22 would not have been obvious to one skilled in the art in view of the cited references and the rejection thereof should be reversed. Similarly, for these same reasons, the cited references do not render dependent claims 23-26 and 36 obvious under 35 U.S.C. § 103. Applicant will also argue hereafter separately additional reasons for allowance of dependent claim 36.

N. Dependent Claim 36

Dependent claim 36 claims the method of making a crustless pizza of claim 22, wherein the total carbohydrates for the pizza is in the range of about 1.0 grams to about 3.5 grams per 4.2 ounce serving of the pizza. The additional limitations of claim 36 are the same limitations as claimed in claim 35 above. Applicant incorporates herein by reference and relies on the arguments and reasons for

6159/USSN 10/692,857  
Group Art Unit 1794


allowance set forth above for claim 35. Accordingly, claim 36 is not obvious over the cited references.

Conclusion

Based on the above, applicant respectfully submits that claims 11-15 are definite under 35 U.S.C. § 112, second paragraph, and that claims 11-14 and 22-36 would not have been obvious to one skilled in the art based on the "Lutein of DreamPharm" excerpt articles relying on the recipes for "DEEP DISH PIZZA" and "Low Carb Pizza" in view of the Google Groups reference to "[www.netition.com](http://www.netition.com)" "KetoCrust". Reversal of the Examiner's rejections is, therefore, respectfully urged.

Respectfully submitted,

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Attachments - Claims Appendix  
- Evidence Appendix  
- Related Proceedings Appendix  
- \$270.00 Brief Fee

The Appealed Claims

11. A crustless pizza without a traditional dough crust layer comprising:

a base layer of non-liquid ingredients consisting essentially of a dry formulated flour mixture and cheese;  
and

at least one food layer on top of said base layer, wherein said crustless pizza is lower in carbohydrates than a non-crustless pizza having a dough crust.

12. The crustless pizza according to claim 11 wherein said dry formulated flour mixture comprises a high gluten flour and a double acting baking powder.

13. The crustless pizza according to claim 12 wherein a batch of said dry formulated flour mixture comprises 6 cups of said high gluten flour and 2 tablespoons of said double acting baking powder, wherein said low carbohydrate crustless pizza comprises approximately one teaspoon of said batch of said dry formulated flour mixture.

14. The crustless pizza according to claim 11 wherein said base layer further comprises at least one additional non-liquid food product selected from the group consisting of meat toppings, poultry toppings, fish toppings, soy

enriched meat toppings, vegetables, fruits and any combination thereof.

15. The crustless pizza of claim 11 wherein said at least one food layer is selected from the group consisting of cheeses, tomato sauce, meat toppings, poultry toppings, fish toppings, soy enriched meat toppings, vegetables, fruits and any combination thereof.

22. A method of making a crustless pizza without a traditional dough crust layer comprising the following sequence of steps:

preparing a dry formulated flour mixture comprising a high gluten flour and a baking powder;

distributing a pre-measured amount of said dry formulated flour mixture evenly onto a cooking pan;

distributing a pre-measured amount of a cheese evenly over said dry formulated flour mixture, wherein said dry formulated flour mixture and said cheese form a base layer;

distributing a pre-measured amount of a pizza sauce or a tomato sauce evenly over and on top of said base layer;

adding and distributing evenly a pre-measured amount of at least one food layer over and on top of said

pizza sauce or said tomato sauce; and

baking said crustless pizza for a suitable time and at a suitable temperature, wherein said crustless pizza is lower in carbohydrates than a non-crustless pizza having a dough crust.

23. The method of making a crustless pizza according to claim 22 wherein said crustless pizza is baked in a pizza oven or a conventional oven from about 9 minutes to about 13 minutes at about 450°F to about 525°F.

24. The method of making a crustless pizza according to claim 22, said method further comprising:

cooling said crustless pizza;

slicing said crustless pizza into desired portions; and

optionally packaging said crustless pizza.

25. The method of making a crustless pizza according to claim 22 wherein said at least one food layer is selected from the group consisting of cheeses, tomato sauce, meat toppings, poultry toppings, fish toppings, soy enriched meat toppings, vegetables, fruits and any combination thereof.

26. The method of making a crustless pizza according to claim 22, said method further comprising:

freezing said crustless pizza;

thawing said crustless pizza at some time after freezing; and

reheating said crustless pizza at a low temperature in a suitable heating apparatus.

27. A pizza without a traditional dough crust consisting essentially of:

a base layer consisting essentially of flour and cheese and forming a support layer for the remaining ingredients of said pizza;

a layer of tomato sauce on top of said base layer; and

at least one food product layer on top of said layer of tomato sauce, wherein said pizza is lower in carbohydrates than a traditional pizza having a dough crust.

28. The pizza of claim 27, wherein said flour is a dry formulated flour consisting essentially of high gluten flour and a double acting baking powder.

29. The pizza of claim 27, wherein said food product layer is selected from the group consisting of meat toppings, poultry toppings, fish toppings, soy enriched meat toppings, vegetables, fruits and any combination thereof.

30. The pizza of claim 27, wherein the total carbohydrates for said pizza is in the range of about 1.0

grams to about 3.5 grams per 4.2 ounce serving of said pizza.

31. A pizza without a traditional dough crust consisting essentially of:

a base layer consisting essentially of flour and cheese and forming a support layer for the remaining ingredients of said pizza;

a layer of cheese on top of said base layer;

a layer of tomato sauce on top of said cheese layer; and

at least one food product layer on top of said layer of tomato sauce, wherein said pizza is lower in carbohydrates than a traditional pizza having a dough crust.

32. The pizza of claim 31, wherein said flour is a dry formulated flour consisting essentially of high gluten flour and a double acting baking powder.

33. The pizza of claim 31, wherein said food product layer is selected from the group consisting of meat toppings, poultry toppings, fish toppings, soy enriched meat toppings, vegetables, fruits and any combination thereof.

34. The pizza of claim 31, wherein the total carbohydrates for said pizza is in the range of about 1.0 grams to about 3.5 grams per 4.2 ounce serving of said



6159/USSN 10/692,857  
Group Art Unit 1794

C L A I M S  
A P P E N D I X

-6-

pizza.

35. The pizza of claim 11, wherein the total carbohydrates for said pizza is in the range of about 1.0 grams to about 3.5 grams per 4.2 ounce serving of said pizza.

36. The method of making a crustless pizza of claim 22, wherein the total carbohydrates for said pizza is in the range of about 1.0 grams to about 3.5 grams per 4.2 ounce serving of said pizza.

\* \* \* \* \*

6159/USSN 10/692,857  
Group Art Unit 1761

E V I D E N C E  
A P P E N D I X

-1-

Exhibit 1 - The American Heritage Dictionary Of The English Language, Published by American Heritage Publishing Co., Inc. and Houghton Mifflin Company, 1973, pages 761 and 892.

Exhibit 2 - "States of Matter", Glenn Research Center, National Aeronautics and Space Administration, www.grc.nasa.gov, 2 pages.

\* \* \* \* \*

THE AMERICAN HERITAGE  
**DICTIONARY**  
OF THE ENGLISH LANGUAGE

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EXHIBIT

1

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**lin-sang** (lin'sāng) *n.* Any of several Asian or African carnivorous mammals of the genera *Poiana* and *Prionodon*, having a spotted coat and a long banded tail. [Malay.]

**lin-seed** (lin'sēd) *n.* The seed of flax, especially when used as the source of linseed oil; flaxseed. [Middle English *linseed*, Old English *linſēd*: Old English *lin*, flax, from Latin *linum* (see *lino-* in Appendix\*) + *SEED*.]

**linseed oil**. A golden-yellow, amber, or brown oil that thickens and hardens on exposure to air, extracted from the seeds of flax, and used as a drying oil in paints and varnishes, and in linoleum, printing inks, and synthetic resins.

**lin-sew-wool-sew** (lin'zē-wōōl'zē) *n., pl. -sews*. A coarse fabric of cotton or linen woven with wool. [Middle English *linsy-wolsye*: probably *Lindsey*, village in Suffolk, England (where it was originally manufactured) + *WOOL*.]

**lin-stock** (lin'stōk) *n.* A long forked stick for holding a match, formerly used to fire cannon. [Dutch *lontstok*: *lont*, match, wick, akin to Middle Low German *lunte* + *stok*, stick.]

**lint** (lint) *n.* 1. Clinging bits of fiber and fluff; fuzz. 2. Downy material obtained by scraping linen cloth and used for dressing wounds. 3. The mass of soft fibers surrounding the seeds of unginnet cotton. [Middle English *lynet*, from Latin *linetum*, linen cloth, from *linetius*, made of linen, from *linum*, flax. See *lino-* in Appendix\*.]

**lin-tel** (lin'tēl) *n.* The horizontal beam that forms the upper member of a window or door frame and supports part of the structure above it. [Middle English, from Old French *lintel*, *lintier*, from Vulgar Latin *limitāris* (unattested), alteration (influenced by Latin *limes*, stem *limit-*, boundary, LIMIT) of Latin *limināris*, of a threshold, from *limen*, threshold, LIMEN.]

**lint-er** (lin'tor) *n.* 1. A machine that removes lint from the seeds of cotton. 2. *Plural*. The short fibers that cling to cotton seeds after the first ginning.

**lint-white** (lin'thwīt) *n.* Poetic. A linnet. [Middle English *lynkwhyte*, Old English *linetwige*, "linseed eater": *lin*, flax (see *linseed*) + *-twige*, "plucker," "eater," from West Germanic *twig-* (unattested), to pluck.]

**lin-y** (lin'ē) *adj.* Also *lin-ey*. 1. Resembling a line; thin or narrow. 2. Marked with or full of lines.

**Linz** (līnz) *n.* The capital of Upper Austria, a province of Austria, an industrial center and river port on the Danube. Population, 206,000.

**li-on** (li'ōn) *n.* 1. A large, carnivorous feline mammal, *Panthera leo*, of Africa and India, having a short tawny coat and a long, heavy mane around the neck and shoulders in the male. 2. Any of several related animals or animals considered to resemble a lion in some way. 3. A person resembling a lion, as in bravery or ferocity. 4. One whose eminence, as in arts and letters, has given him social prestige. 5. The national emblem of Great Britain. —*beard the lion in his den*. To face or defy the opposition in its territory or home. —*the lion's share*. The greatest or best part of the whole. —*twist the lion's tail*. To irritate or insult the people or government of Great Britain. [Middle English *lioun*, *leoun*, from Norman French *liun* and Old French *lion*, both from Latin *leō* (stem *leōn-*), from Greek *leōn*, perhaps from Semitic, akin to Hebrew *lābhī*, lion, and *lāyish*, lion (whence probably Homeric form *lis*).]

**Li-on** (li'ōn) *n.* *Astronomy*. The constellation and sign of the zodiac, *Leo* (see). Preceded by *the*.

**li-on-ess** (li'ō-nis) *n.* A female lion. [Middle English *leonesse*, from Old French *lionnesse*, from *lion*, *LION*.]

**li-on-heart-ed** (li'ōn-hārt'id) *adj.* Extraordinarily courageous. —*li-on-heart-ed-ness* *n.*

**li-on-ize** (li'ō-nīz) *tr.v.* -ized, -izing, -izes. To look upon or treat (a person) as a celebrity. —*li-on-i-za-tion* *n.* —*li-on-i-z'er* *n.*

**Li-ons**, Gulf of (li'ōnz). A wide inlet of the Mediterranean on the southern coast of France.

**lip** (lip) *n.* 1. *Anatomy*. Either of two fleshy, muscular folds that together surround the opening of the mouth. 2. Any structure or part that similarly encircles or bounds an orifice, as: *a. Anatomy*. A labium. *b. The margin of flesh around a wound.* *c. Either of the margins of the aperture of a gastropod shell.* *d. The rim of a vessel, bell, crater, or the like.* 3. *Botany*. One of the protruding divisions of an irregular corolla or calyx, either paired, as in the snapdragon, or single, as in an orchid. 4. The tip of a pouring spout. 5. *Slang*. Insolent talk. —*bite one's lip*. 1. To hold back one's anger or other feeling. 2. To show vexation. —*button one's lip*. *Slang*. To stop talking. —*smack one's lips*. To relish or gloat over something anticipated or remembered. —*tr.v.* *lipped*, *lipping*, *lips*. 1. *a.* To touch the lips to. *b. Poetic*. To kiss. 2. To utter; especially, to whisper or murmur. 3. To lap. Used of water. 4. To serve as a lip or rim to. 5. *Golf*. To hit the ball so that it stops just at the edge of the hole. —*adj.* 1. *Phonetics*. Formed or uttered with the help of the lips; labial. 2. Uttered insincerely: *lip admiration*. [Middle English *lippe*, Old English *lippa*. See *leb-* in Appendix\*.]

**Lip-a-ri Islands** (lip'ā-rē). A group of islands of Italy, in the Tyrrhenian Sea off the northeastern coast of Sicily. Also called "Aeolian Islands."

**lip-ase** (lip'ās, li'pās) *n.* An enzyme that hydrolyzes fats to form glycerol and fatty acids. [LIP(O)- + *-ASE*.]

**Li-petsk** (lē'pētsk). A city of the Soviet Union, in the southwestern Russian S.F.S.R. Population, 226,000.

**lip-id** (lip'id, li'pid) *n.* Also *lip-ide* (lip'id, li'pid'). Any of numerous fats and fatlike materials that are generally insoluble in water but soluble in common organic solvents, that are related to the fatty acid esters, and that together with carbohydrates and proteins constitute the principal structural material of living cells. [French *lipide*: LIP(O)- + *-ID*.]

**Lip-mann** (lip'mān), **Fritz Albert**. Born 1899. German-born American biochemist; worked on enzymes.

**Li Po** (lē' bō'). Chinese poet of the eighth century A.D.

**li-po-**, **lip-**. Indicates fat or fatty; for example, *lipolysis*, *lipoma*. [New Latin, from Greek *lipos*, fat. See *leip-* in Appendix\*.]

**lip-oid** (lip'oid) *adj.* Also *lip-oi-dal* (li-poid'l). Resembling fat; fatty. [LIP(O)- + *-OID*.] —*lip'oid* *n.*

**li-pol-y-sis** (li-pōl'ā-sis) *n.* Hydrolysis of fat. [LIPO- + *-LYSIS*.]

**li-po-ma** (li-pō'mā) *n., pl. -mata* (-mā-tā) or *-mas*. A benign tumor of chiefly fatty cells. [LIP(O)- + *-OMA*.] —*li-pom'a-tous* (-pōm'ā-tās) *adj.*

**lip-o-pro-tein** (lip'ō-prō'tēn, -tē-in) *n.* A conjugated protein consisting of a simple protein combined with a lipid group.

**lip-o-trop-ic** (lip'ō-trōp'ik) *adj.* Preventing abnormal or excessive accumulation of fat in the liver. [LIPO- + *-TROPIC*.] —*li-po'tro-py* (li-pōt'rā-pē), *li-po'tro-pism* *n.*

**Lip-pē** (lip'pē). A former state of Germany, included in North Rhine-Westphalia, West Germany, since 1945.

**Lip-pi** (lip'pē; Italian *lèp'pē*), **Fra Filippo** or **Lippo**. 1406?-1469. With his son, *Filippino* (1457?-1504), Florentine painter.

**Lipp-mann** (lip'mān), **Walter**. Born 1889. American journalist.

**lip-read** (lip'rēd) *v.* -read (-rēd'), -reading, -reads. —*tr.* To interpret (another's utterance) by lip reading. —*intr.* To use lip reading.

**lip reading**. A technique used, especially by the deaf, to understand inaudible speech by interpreting lip and facial movements. —*lip reader*.

**lip service**. Insincere agreement or payment of respect.

**lip-stick** (lip'stik) *n.* A stick of waxy or pastelike lip coloring enclosed in a small cylindrical case.

**liq.** 1. liquid. 2. liquor.

**li-quate** (li'kwāt) *tr.v.* -quated, -quating, -quates. To separate (the metals in an alloy) by melting some constituents while leaving others solid. [Latin *liquare*, to melt, dissolve. See *leikw-* in Appendix\*.] —*li-quation* *n.*

**li-qu-e-fac-tion** (lik'wā-fāk'shən) *n.* 1. The process of liquefying. 2. The state of being liquefied.

**li-qu-e-fi-er** (lik'wā-fī'or) *n.* One that liquefies.

**li-qu-e-fy** (lik'wā-fī) *v.* -fied, -fying, -fies. Also *li-qu-i-fy*. —*tr.* To cause to become liquid, especially: *a.* To melt (a solid) by heating. *b.* To condense (a gas) by cooling. —*intr.* To become liquid. —*See* Synonyms at *melt*. [Old French *liquefier*, from Latin *liquefacere*: *liquēre*, to be liquid (see *leikw-* in Appendix\*) + *facere*, to make (see *dhō-* in Appendix\*).]

**li-ques-cent** (li-kwēs'ant) *adj.* Becoming or tending to become liquid; melting. [Latin *liquescens*, present participle of *liquescere*, to become liquid, from *liquere*, to be liquid. See *leikw-* in Appendix\*.] —*li-ques'cence*, *li-ques'cence* *n.*

**li-queur** (li-kūr, -kyōōr) *n.* A sweet syrupy alcoholic beverage often with a brandy base. Also called "cordial." [French, from Old French *licour*, liquid, LIQUOR.]

**li-uid** (li'wid) *n.* *Abbr.* liq. 1. The state of matter in which a substance exhibits a characteristic readiness to flow, little or no tendency to disperse, and relatively high incompressibility. 2. Matter or a specific body of matter in this state. 3. *Phonetics*. The sounds of *l* and *r*, which are nonfrictional and vowel-like. —*adj.* 1. Of or being a liquid. 2. Liquefied, especially: *a.* Melted by heating: *liquid wax*. *b.* Condensed by cooling: *liquid oxygen*. 3. Transparent; shining: "the beauty of the hawk's eye . . . full, liquid, and piercing." (Richard Jefferies). 4. *a.* Flowing and clear; musical; limpid: *liquid prose*. *b.* Not guttural and harsh; smooth; fluent. Said of a speech sound. 5. Flowing gracefully in motion. 6. Readily converted into cash: *liquid assets*. [From Middle English *liquide* (adjective), from Old French, from Latin *liquidus*, from *liquere*, to be liquid. See *leikw-* in Appendix\*.]

**liquid air**. Air in the liquid state, condensed from the gas by cooling and sometimes pressure.

**liq-uid-am-bar** (lik'wid-ām'bār) *n.* A tree of the genus *Liquidambar*, such as the sweet gum. [New Latin *Liquidambar*, "liquid amber" (from its aromatic resin): LIQUID + Medieval Latin *ambar*, ambergris, AMBER.]

**liq-ui-date** (lik'wā-dāt) *v.* -dated, -dating, -dates. —*tr.* 1. To pay off or settle (a debt, claim, or obligation). 2. To wind up the affairs of (a business firm, a bankrupt estate, or the like) by determining the liabilities and applying the assets to their discharge. 3. To convert (assets) into cash. 4. To abolish. 5. To kill. —*intr.* To go into liquidation. [Late Latin *liquidare*, to make clear, melt, from Latin *liquidus*, LIQUID.]

**liq-ui-da-tion** (lik'wā-dā'shən) *n.* 1. The action or process of liquidating. 2. The state of being liquidated.

**liquid crystal**. Any of various liquids in which the atoms or molecules are regularly arrayed in either one dimension or two dimensions, the order giving rise to optical properties, such as anisotropic scattering, associated with the crystals.

**liquid measure**. 1. A unit or system of units of liquid capacity. 2. A measure for liquids. See *measurement*.

**liq-uor** (lik'or) *n.* *Abbr.* liq. 1. An alcoholic beverage made by distillation rather than by fermentation. 2. A liquid substance, such as broth or juice, produced in cooking. 3. *Pharmacy*. An aqueous solution of a nonvolatile substance. 4. A solution, emulsion, or suspension for industrial use. —*tr.v.* *liquored*, -uoring, -uors. *Slang*. 1. To cause to become drunk with alcoholic liquor. Used with *up*. 2. *a.* To treat (leather) with grease. *b.* To steep (malt or the like). [Middle English *licolour*, liquid, beverage, from Old French, from Latin *liquor*, from *liquere*, to be liquid. See *leikw-* in Appendix\*.]

**li-quo-ri-ce**. Chiefly *British*. Variant of *licorice*.

**li-quor-ish**. Variant of *tickerish*.



lion  
*Panthera leo*

**nom-i-nal** (nòm'ə-nəl) *adj.* 1. a. Of, like, pertaining to, or consisting of a name or names. b. Bearing a person's name: *nominal shares*. 2. Existing in name only; not real or actual: *theoretical*; so-called: "*seduced by fashion, and blindly accepting nominal pleasures, I lost real ones*" (Lord Chesterfield). 3. Minimal in comparison to the real value: *a nominal sum*. 4. *Grammar*. Of, like, or pertaining to a noun or nouns; substantive. [Latin *nōminālis*, from *nōmen* (stem *nōmin-*), name. See *nomen* in Appendix.\*] —**nom'i-nal-ly** *adv.*

**Usage:** Applied to amounts, *nominal* and *low* are not interchangeable. *Low* is nonspecific. *Nominal* pertains only to that which is so low in relation to value that it is a mere token. **nom-i-nal-ism** (nòm'ə-nəl-iz'm) *n.* *Philosophy*. The doctrine that abstract concepts, general terms, or universals have no objective reference but exist only as names. Compare *realism*. —**nom'i-nal-ist** *adj. & n.* —**nom'i-nal-is'tic** *adj.*

**nominal value.** The stated, par, or book value of a share of stock, as opposed to the actual or market value.

**nom-i-nate** (nòm'ə-nāt') *tr.v.* -nated, -nating, -nates. 1. To propose by name as a candidate. 2. To designate or appoint to some office, responsibility, or honor. —*adj.* (nòm'ə-nīt'). Having a particular or special name. [Latin *nōmināre*, to name, from *nōmen* (stem *nōmin-*), name. See *nomen* in Appendix.\*] —**nom'i-na-tor** (-nā'tər) *n.*

**nom-i-na-tion** (nòm'ə-nā'shən) *n.* 1. The act of appointing a person to office. 2. The submission of a name for candidacy or for appointment. 3. The state of being nominated.

**nom-i-na-tive** (nòm'ə-nā'tiv) *for senses 1 and 2*; nòm'ə-nā-tiv, nòm'ə-nā'tiv *for sense 3* *adj.* *Abbr.* *nom.* 1. a. Appointed to office. b. Nominated as candidate to office. 2. Having or bearing a person's name: *nominate shares*. 3. *Grammar*. Of or designating the case of the subject of a finite verb (as *We in We awoke at dawn*) and of words identified with the subject, such as a predicate nominative (as *men in These are the men*). —*n.* (nòm'ə-nā-tiv, nòm'ə-nā-tiv). *Abbr.* *nom.* The nominative case of a word in that case. [Noun; Middle English *nominatīf* (case), from Old French (*cas*) *nominatīf*, from Latin *nōminātīvus* (cāsus), from *nōmināre*, to NOMINATE.]

**nom-i-nee** (nòm'ə-nē') *n.* One who is nominated to an office or for candidacy. [NOMINATE] + *-EE*.]

**nomo-** Indicates law, usage, or custom; for example, *nomograph*. [Greek *nomos*, usage, law. See *nem-* in Appendix.\*]

**nom-o-graph** (nòm'ə-grāf', -grāf', nòm'ə-) *n.* 1. A graph consisting of three coplanar curves, usually parallel straight lines, each graduated for a different variable so that a straight line cutting all three curves intersects the related values of each variable. 2. Any chart representing numerical relationships. Also called "alignment chart," "nomogram." ["A diagram representing mathematical laws": NOMO- + -GRAPH.] —**no-mog'-ra-phy** (nō-mōg'rā-fē) *n.*

**-nomy.** Indicates the systematization of knowledge about, or laws governing, a specified field; for example, *astronomy*. [From Latin *-nomia*, from Greek; either from agent nouns or adjectives in *-nomia*, from *nemein*, to distribute, manage, or from *nomos*, law. See *nem-* in Appendix.\*]

**non-** Indicates not. **Note:** Many compounds other than those entered here may be formed with *non-*. In forming compounds, *non-* is normally joined with the following element without space or hyphen: *nonnutritive*. However, if the second element begins with a capital letter, it is separated with a hyphen: *non-French*. [Middle English *non-*, *nonn-*, from Old French *non-*, from Latin *nōn*, not. See *ne* in Appendix.\*]

**Usage:** *Non-* is generally restricted in meaning to simple negation; it adds the sense of *not* and implies nothing further. It is usually less forceful than the following prefixes used in negation: *un-*, *in-*, *il-*, *im-*, *ir-*, and *a-*. Unlike *non-*, these generally either emphasize negation strongly or add a sense in direct opposition to that of the words to which they are joined. *Non-American* specifies only a limitation; *un-American* implies active opposition. *Nonreligious* and *nonhuman* are not directly opposed to *religious* and *human* in the sense that *irreligious* and *inhuman* are.

**nona-** Indicates ninth or nine; for example, *nonagon*. [From Latin *nōnus*, ninth. See *newn* in Appendix.\*]

**non-age** (nòn'ij, nō'nij) *n.* 1. The period during which one is legally underage; legal minority. 2. A stage of immaturity: "*the bravest achievements were always accomplished in the nonage of a nation*" (Thomas Paine). [Middle English, from Old French: *NON-* + *age*, *aage*, *AGE*.]

**non-a-ge-nar-i-an** (nòn'ə-jə-nār'ē-ən, nō'nə-) *adj.* 1. Being ninety years old or between ninety and one hundred years old. 2. Of or like someone of this age. —*n.* A person of ninety or between ninety and one hundred years of age. [From Latin *nōnāgenārius*, from *nōnāgēni*, ninety each, from *nōnāginta*, ninety: *novem*, nine (see *newn* in Appendix\*) + *-gintā*, ten times (see *dekā* in Appendix\*).] —**non-a-gon** (nòn'ə-gōn', nō'nə-) *n.* A polygon having nine sides. [NONA- + -GON.]

**non-a-ligned** (nòn'ə-lind') *adj.* Not in alliance with any power bloc; neutral: *a nonaligned nation*. —**non-a-lign'ment** *n.*

**non-a-no-ic acid** (nòn'ə-nō'ik). A chemical, *pelargonic acid* (see). [From *nonane*, a paraffin: NONA- + -ANE (because it is the ninth in the methane series).]

**nonce** (nōns) *n.* The present or particular time or occasion. Used in the expression *for the nonce*: "*her tendency to discover a touch of sadness had for the nonce disappeared*" (Theodore Dreiser). [Middle English *for the nones*, *for the nanes*, originally *for then anes*, "for the one (purpose or occasion)": *FOR* + *then*, dative singular neuter of *THE* + *anes*, *ONCE*.]

**nonce word.** A word invented and used for a particular occasion, or for the nonce; for example, the word *mileconsuming* in "*the wagon beginning to fall into its slow and mileconsuming clatter*" (William Faulkner).

**non-chal-lance** (nòn'shə-lāns') *n.* Debonair lack of concern: "*The contemptuous nonchalance of her trailed hand irritated him*" (Elizabeth Bowen). See Synonyms at *equanimity*.

**non-chal-lant** (nòn'shə-lānt') *adj.* Appearing casually unconcerned; indifferent. See Synonyms at *cool*. [French, from Old French, from *nonchaloir*, to be unconcerned: *NON-* + *chaloir*, to be interested or concerned, from Latin *calēre*, to be warm (see *kel-* in Appendix\*).] —**non'cha-lant'ly** *adv.*

**non-com** (nòn'kōm') *n.* A noncommissioned officer.

**non-com-bat-ant** (nòn'kām-bāt'ant, -kōm'bā-tant) *n.* 1. A person connected with the armed forces whose duties are other than fighting, such as a chaplain. 2. A civilian in wartime.

**non-com-mis-sioned officer** (nòn'ka-mish'and). *Abbr.* *NCO*, *N.C.O.* An enlisted member of the armed forces appointed to a rank conferring leadership over other men. Compare *commissioned officer*, *warrant officer*.

**non-com-mit-tal** (nòn'kām-mīt'l) *adj.* Refusing commitment to any particular course of action or opinion; revealing no preference or purpose: "*his face was the color of a freshly baked pork pie and as noncommittal*" (Thomas Pynchon). See Synonyms at *silent*. —**non'com-mit'tal-ly** *adv.*

**non-com-pliance** (nòn'kām-plī'əns) *n.* Failure or refusal to comply with something. —**non'com-pli'ant** *adj. & n.*

**non-com-pos-men-tis** (nòn kōm'pōs mēn'tis). *Law*. Not of sound mind and hence not legally responsible. [Latin, "not having control of the mind."]

**non-con-duc-tor** (nòn'kōn-dūkt'ər) *n.* A substance that conducts little or no electricity or heat. —**non-con-duct'ing** *adj.*

**non-con-form-ist** (nòn'kōn-fōr'mist) *n.* One who refuses to be bound by the accepted rules, beliefs, or practices of a group. —**non'con-form'i-ty** *n.*

**non-co-op-er-a-tion** (nòn'kō-ōp'ə-rā'shən) *n.* 1. Failure or refusal to cooperate. 2. Resistance to government through civil disobedience or refusal to perform civil duties, such as paying taxes. —**non'co-op'er-a-tion-ist** *n.* —**non'co-op'er-a-tive** (-ōp'ə-rə-tiv, -ōp'ə-rā'tiv) *adj.* —**non'co-op'er-a-tor** (-tər) *n.*

**non-de-nom-i-na-tion-al** (nòn'di-nòm'ə-nā'shən-əl) *adj.* Not restricted to or associated with a religious denomination.

**non-de-script** (nòn'di-skript') *adj.* Lacking in distinctive qualities; without any individual character or form: "*This expression gave temporary meaning to a set of features otherwise nondescript*" (Katherine Anne Porter). —*n.* A person or thing with no outstanding or distinguishing features. [NON- + Latin *dēscriptus*, past participle of *dēscribere*, DESCRIBE.]

**non-dis-junc-tion** (nòn'dis-jūngk'shən) *n.* *Biology*. The failure of paired chromosomes to separate during mitosis.

**non-dis-tinc-tive** (nòn'dis-tīngk'tiv) *adj.* 1. Not distinctive. 2. *Linguistics*. Not helping to distinguish meaning: *The vowel sound in the words "hit" and "slip" is nondistinctive*.

**none** (nūn) *pron.* 1. No one; not one; nobody: *None dared to do it*. 2. Not any; no persons or things of a specified group: *Of all my classmates, none survived the war*. 3. No part; not any; nothing: *none of my business; none of his concern*. —*adj.* Not one; no. Used before vowels: *There is none other available*. —*adv.* In no way; to no extent; not at all: *He is none too happy*. [Middle English *nan*, *none*, Old English *nān*: *ne*, no (see *ne* in Appendix\*) + *ān*, one (see *oino-* in Appendix\*).]

**Usage:** *None* (pronoun) may take a singular verb or a plural one, according to 68 per cent of the Usage Panel. They specify a singular verb when *none* can logically be construed as singular (when *not one* or *no one* can be substituted for *none*): *None of us is wholly blameless*. A singular verb should also be used when *none* precedes a singular noun: *None of the laundry was really clean*. A plural verb should be used when *none* applies to more than one (when *no persons*, *not any of a group of persons* or *things* can be substituted for *none*): *None are more wretched than victims of natural disasters*. When *none* can be logically construed as either singular or plural, either a singular or plural verb is possible: *None of these books is (or are) really helpful*. In every case the verb and related personal pronouns and pronominal adjectives must agree in number: *none has his (or none have theirs)*. According to 28 per cent of the Panel, *none* must always take a singular verb. See Usage note at *neither*.

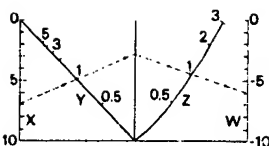
**non-ef-fec-tive** (nòn'fēk'tiv) *adj.* 1. Not effective. 2. Not fit for regular duty in military service. —*n.* A member of one of the armed services who is not fit for regular duty, as from illness or injury.

**non-e-go** (nòn'ē'gō) *n., pl. -gos*. All that is not part of the ego or the conscious self. [Translation of German *Nicht-ich*.]

**non-en-ti-tiy** (nòn-ēn'tā-tē) *n., pl. -ties*. 1. Nonsense. 2. Something that does not exist, or that exists only in the imagination. 3. A totally insignificant person or thing.

**nones** (nōnz) *pl. n.* 1. In the ancient Roman calendar, the ninth day before the ides of a month; the seventh of March, May, July, and October, and the fifth day of the other months. 2. *Ecclesiastical*. a. The fifth of the seven canonical hours (see). b. The time of day set aside for this prayer, usually the ninth hour after sunrise. [In sense 1, Middle English *nonys*, *nonas*, from Old French *nones*, from Latin *nōnae*, feminine plural of *nōnus*, ninth. See *newn* in Appendix.\* In sense 2, plural of *none*, from Old French *none*, from Late Latin *nōna* (*hōra*), the ninth hour, from the feminine of Latin *nōnus*, ninth.)]

**none-such** (nūn'sūch') *n.* Also *non-such*. 1. A person or thing without equal: *a onesuch among athletes*. 2. A plant, the black medick (see). [NONE + SUCH.] —**none'such'** *adj.*



**nomograph**  
Combination straight-line and curved-scale nomograph for equation  $xy + wz = z^2$ . Dashed line graphically determines that  $w = -6$  when  $x = 7$ ,  $y = 1$ , and  $z = 1$ .



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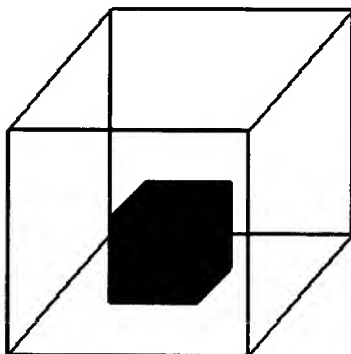
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# States of Matter

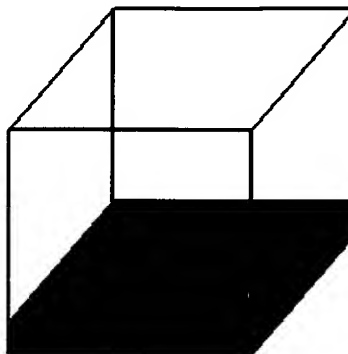
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**Solid**

**Holds Shape**

**Fixed Volume**

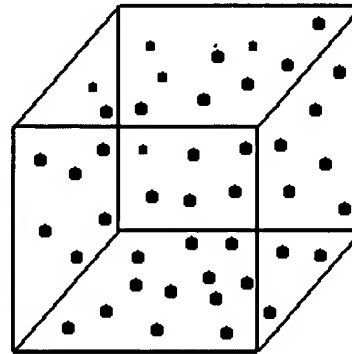


**Liquid**

**Shape of Container**

**Free Surface**

**Fixed Volume**



**Gas**

**Shape of Container**

**Volume of Container**

All matter is made from atoms with the configuration of the atom, the number of protons, neutrons, and electrons, determining the kind of matter present (oxygen, lead, silver, neon ...). Every substance has a unique number of protons, neutrons, and electrons. Oxygen, for example, has 8 protons, 8 neutrons, and 8 electrons. Individual atoms can combine with other atoms to form molecules. Water molecules contain two atoms of hydrogen H and one atom of oxygen O and is chemically called H<sub>2</sub>O. Oxygen and nitrogen, which are the major components of air, occur in nature as **diatomic** (two atom) molecules. Regardless of the type of molecule, matter normally exists as either a **solid**, a **liquid**, or a **gas**. We call this property of matter the **state** of the matter. The three normal states of matter have unique characteristics which are listed on the slide.

## Solid

In a **solid** the molecules are closely bound to one another by molecular forces. A solid holds its shape and the volume of a solid is fixed by the shape of the solid.

## Liquid

In a **liquid** the molecular forces are weaker than in a solid. A liquid will take the shape of its container with a free surface in a gravitational field. In microgravity, a liquid forms a ball inside a free surface. Regardless of gravity, a liquid has a fixed volume.

## Gas

In a **gas** the molecular forces are very weak. A gas fills its container, taking both the shape and the volume of the container.

## Fluids (Liquids and Gases)



Liquids and gases are called **fluids** because they can be made to flow, or move. In any fluid, the molecules themselves are in constant, random motion, colliding with each other and with the walls of any container. The motion of fluids and the reaction to external forces are described by the Navier-Stokes Equations, which express a conservation of mass, momentum, and energy. The motion of solids and the reaction to external forces are described by Newton's Laws of Motion.

Any substance can occur in any state. Under standard atmospheric conditions, water exists as a liquid. But if we lower the temperature below 0 degrees Celsius, or 32 degrees Fahrenheit, water changes its state into a solid called ice. Similarly, if we heat a volume of water above 100 degrees Celsius, or 212 degrees Fahrenheit, water changes its state into a gas called water vapor. Changes in the state of matter are **physical changes**, not chemical changes. A molecule of water vapor has the same chemical composition,  $H_2O$ , as a molecule of liquid water or a molecule of ice.

When studying gases, we can investigate the motions and interactions of individual molecules, or we can investigate the large scale action of the gas as a whole. Scientists refer to the large scale motion of the gas as the **macro scale** and the individual molecular motions as the **micro scale**. Some phenomenon are easier to understand and explain based on the macro scale, while other phenomenon are more easily explained on the micro scale. Macro scale investigations are based on things that we can easily observe and measure. But micro scale investigations are based on rather simple theories because we cannot actually observe an individual gas molecule in motion. Macro scale and micro scale investigations are just two views of the same thing.

### Plasma - the "fourth state"

The three normal states of matter listed on the slide have been known for many years and studied in physics and chemistry classes. In recent times, we have begun to study matter at the very high temperatures and pressures which typically occur on the Sun, or during re-entry from space. Under these conditions, the atoms themselves begin to break down; electrons are stripped from their orbit around the nucleus leaving a positively charged **ion** behind. The resulting mixture of neutral atoms, free electrons, and charged ions is called a **plasma**. A plasma has some unique qualities that causes scientists to label it a "fourth state" of matter. A plasma is a fluid, like a liquid or gas, but because of the charged particles present in a plasma, it responds to and generates electro-magnetic forces. There are fluid dynamic equations, called the Boltzman equations, which include the electro-magnetic forces with the normal fluid forces of the Navier-Stokes equations. NASA is currently doing research into the use of plasmas for an ion propulsion system.

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### Activities:

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### Guided Tours

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### Navigation ..

[Propulsion Index](#)[Aerodynamics Index](#)[Compressible Flow](#)[Hypersonic Index](#)[Beginner's Guide Home Page](#)

- + Inspector General Hotline
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None.

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